Homework 2

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February 8, 2017

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From this vague scenario, identify a problem you would like to study. Which variables affect the behavior you have identified in the problem identification? Which variables are the most important?

A company with a fleet of trucks faces increasing maintenance costs as the age and mileage of the trucks increase

0.2 Page 79: problem 11

Determine whether the data set supports the stated proportionality model

$$y \propto x^3$$

Table 1:

y	4	11	22	35	56	80	107	140	175	215
x	1	2	3	4	5	6	7	8	9	10

0.3 Page 94: problem 4

Lumber Cutters - Lumber cutters wish to use readily available measurements to estimate the number of board feet for lumber in a tree. Assume they measure the diameter of the tree in inches at waist height. Develop a model that predicts board feet as a function of diameter in inches.

Use the following data for your test.

Table 2:

x	17	19	20	23	25	28	32	38	39	41
y	19	25	32	57	71	113	123	252	259	294

The variable x is the diameter of a ponderous pine in inches, and y is the number of board feet divided by 10.

a. Consider two separate assumptions, allowing each to lead to a model. Completely analyze each model.

b. Assume that all trees are right-circular cylinders and are approximately the same height.

ii. Assume that all trees are right-circular cylinders and that the height of the tree is proportional to the diamete.

b. Which model appears to be better? Why? Justify your conclusions.

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